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FISHERY RESEARCH

FISHERY RESEARCH SUPERVISION AND SUPPORT ANNUAL PERFORMANCE REPORT 1995-1996

By:

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IDFG 96-27

ANNUAL PERFORMANCE REPORT

State of: Idaho Grant: F-73-R-18, Fishery Research

Project No.: 1 Title: Fishery Research Supervision

Contract Period: April 1, 1995 to June 30, 1996

OBJECTIVES

1. To annually provide administrative and technical support, direct field operations and planning for each of IDFG fishery research projects (15) to produce:

   a) a work plan
   b) a project statement
   c) a report, and
   d) a project review

2. To provide technical training and continuing education for IDFG's fishery staff (45) in procedures, technical writing, and statistical design on analysis.

3. To provide technical edits, peer review, and publications of 41 to 50 fishery activities and findings of IDFG for permanent record.

4. To maintain the IDFG report resource reference area and a computerized report data base.

5. To provide office space and equipment storage for field staff at the Nampa Fisheries Research Center.

ADMINISTRATION AND PLANNING

Direct supervision was provided to three Principal Fishery Research Biologists, two Fishery Staff Biologists, and one Senior Fishery Research Biologist. Indirect supervision was provided to twelve Fishery Research Biologists and six Senior Fishery Technicians. Principals had direct supervision of from four to seven full-time employees; the two Staff Biologists and Senior Research Biologist had none.

During the past year, research activities were restructured to flatten and even out program and supervision responsibilities. Current structure involves the following research programs (and full-time personnel): Discretionary Resident Fisheries Research (6), Statistical

and Survey Support (1), Sockeye Recovery (4), Anadromous Natural Production Systems (4), Anadromous Supplemented Systems (5), Large Lakes and Reservoirs (3), and Regulated Rivers (4). The first two programs are Sport Fish Restoration funded; the remainder are entirely funded by federal mitigation programs.

Sport Fish Restoration, Bonneville Power Administration, and U.S. Fish and Wildlife Service Lower Snake River Compensation Plan grants and contracts to support nineteen Department and three University conducted research projects were prepared and submitted. Individual study review, work plan, and study design meetings were conducted for various projects. Field reviews were conducted on six projects.

The list of prioritized "discretionary" (Sport Fish Restoration) research needs developed during the previous year was used to develop five-year research plans (Appendix A).

A meeting of anadromous research personnel was held in June 1995 to identify and prioritize anadromous research needs. Input from Fisheries Bureau management staff was incorporated and the list (Appendix B) included as part of the Department's 1996-2000 Fisheries Management Plan.

TRAINING

In conjunction with the annual research meeting, a half-day session on "non-biological factors in resource decision making" was put on, highlighted by a guest speaker from Northwestern University. A half-day training exercise on effective communication was also conducted.

PUBLICATIONS

New report guidelines and a report review process were developed and initiated (Appendices C and D). Reports are submitted to three peers for review.

Eighteen annual reports and five research briefs were reviewed, edited, prepared by word processing specialists for printing, and submitted to funding sources.

RESOURCE REFERENCE AREA

The Report Reference Area and Fisheries Report Catalog System were maintained and copies of reports provided in response to requests.

NAMPA FACILITY

Approval was obtained from Canyon County Planning and Zoning and construction of a storage shed for Nampa Research personnel was completed utilizing Bonneville Power Administration funding.

SPORT FISH RESTORATION COORDINATION

The submission of annual grant agreements was coordinated. Developments in Sport Fish Restoration Program rules and policies were communicated to potentially affected Department personnel. Sport Fish Restoration funding levels among bureaus was coordinated during the state budget preparation process.

Annual Region 1 /7 Federal Aid Coordinators Conference was attended and I participated in a meeting of Assistant Regional Directors for Federal Aid as a representative of the Working Sub-Committee of the International Association of Fish and Wildlife Agencies' Grants and Aid Committee.

Author:

AI Val Vooren
Fishery Research Manager

Appendix A.

Wild Trout Project- 5yr Plan
Investigator: Steve Elle

Subprojects	95	96	97	98	99
A) Effects of whirling disease on native salmonid stocks					
1. Examine population effects using actual stream pop. Comparisons	25	30	10	-	-
2. Dept technical specialist out-of-state coordination or research planning etc.	10	5	5	5	-
B) Effects of electrofishing injury on Idaho stocks					
1. Simulation of pop effects	20	-	-	-	-
3. Paired streams/sections	5	30	20	-	-
4.					
C) Develop stream sampling matrix that defines N for “true” density and for change in X percent.	-	-	-	35	10
D) Bull trout population response to catch and release					
1. Establish protocols for Monitoring	5	-	-	-	-
-work with hatcheries to expand data-gathering capabilities	5	30	20	-	-
2. Data collection analysis	5	5	5	5	30

E) Evaluate salmonid special regulations permitting the use of bait					
1. Big Wood River design & fieldwork	25	-	-	-	-
2. Supplement management monitoring efforts if necessary	-	20	5	45	50
F) Contingency/flex-time	5	10	10	10	10

Angler Behavior Project- 5yr Plan
Investigator: Steve Elle

Subprojects	95	96	97	98	99
A) Evaluate angler displacement from special regs	20	20	20	-	-
1. Backyard vs destination Fisheries 2. Salmonids vs centrachids	25				
B) Develop methods for improving angler attitude/preference surveys and public direction in general.					
1. Focus groups, angler panels, surveys, public meetings. Evaluate and develop optimum mix of methods.	20	20	10	10	10
2. Social desirability bias -survey response -creel data	-	5	20	20	-
C) Evaluate angler education/ expectations effects on satisfaction.	-	-	Rod_a	Rod	10
1. Effects					
2. Ability to modify					

D) Develop more informative measures of angler satisfaction. 1. Develop measures (e.g. lbs/hr, smiles/hr etc. 2. Evaluate	-		-	20	30
E) Continue development of Random Response methods 1 . Test in higher non-compliance situation 2. Tool transfer to wildlife & rest of Department	-	Rod	-	-	-
	5				
F) Supervision	50	40	40	40	40
G) Contingency time for special projects	10	10	10	10	10

a) Rod = field work required on this project and will be handled largely by permanent technician

Subprojects	95	96	97	98	99
A) Assess population impact of irrigation diversions on wild trout stocks					
1. Assess effects −quantify losses (diversion trapping) -assess pop impacts via modeling and/or empirical observations stream pop (electrofishing) creel data	70	80	60	40	30
2. Develop preventive technology (if warranted) −hatchery and field trials -implementation and monitoring pop. response	-	10	10	25	30
B) Assess fish loss (entrainment) effects on reservoir fisheries					
1. Technology synopsis			10		
2. Evaluate existing projects for selector gate options and other possible operational modifications			10		
3. Behavioral studies (what is entrainable in front of dams ala Dworshak)	-	-	-	25	20
4. Implement operational modifi cations and monitor				-	10

C) Mountain Lake Synopis Summarize existing strategies nationwide, compare to our program	20 -					
D) Contingency time for special projects	10	10	10	10	10	

Hatchery Trout Project- 5yr Plan
Investigator: Jeff Dillon

Subprojects	95	96	97	98	99
A) Evaluate finglerling/ catchable tradeoffs and develop stocking guidelines					
1. Conduct evaluations	20	25	10	10	10
2. Develop statewide guide- lines		5			
3. Communicate findings at Region and Bureau levels via research briefs	10		10		
B) Sterile fish development					
1. Develop sterile catchables to minimize genetic risks to wild salmonid stocks	30	10	5	5	
2. Develop sterile Rb-Ct Hybrids		20	5	5	
3. Performance evaluations of both in hatchery and wild	-	10	20	25	30
C) Evaluate life history characteristics of Hayspur and domestic Kamloops stocks					
1. Flatwater trophy potential -growth -longevity -hooking mort limiting? -food habits	10				
2. Stock characteristics -reservoir habitat use and movement -stream movement/mortality sources-stream food habits			30	30	25

D) Evaluate methods for increasing returns/catch rates					
1 . Food training experiments	20	20			
2. Selection of catchable brood-stock	-	-	10	-	25
3. Effects of size on returns	-		-	15	
E) Contingency time	10	10	10	10	10

Appendix B.

Fisheries Research

The mission of the Department's Fisheries Research Section is:

"To develop and effectively communicate scientifically sound information and tools to enhance the management of Idaho's fisheries."

The section has four organizational components: anadromous fish species mitigation, resident fish species mitigation (both 100% outside funding), discretionary research, and program management/technical support (both funded 75% with federal Sport Fish Restoration funds). These four programs contain 10, 6, 6, and 2 full-time professional staff, respectively.

Mitigation research is applied in an adaptive management approach. Population monitoring and other findings are used to recover populations of endangered sockeye, chinook, and Kootenai River sturgeon, as well as populations of steelhead, kokanee, burbot, and other species that have been adversely impacted by hydropower systems. The general direction of these research activities is coordinated with other resource agencies, tribes, and federal or utility funding entities and set through funding contracts.

Because of the evolving status of salmon and steelhead recovery issues and approaches, research efforts on those species must be somewhat dynamic. Department anadromous research and management personnel identified and prioritized information needs most critical to recovery efforts during the next five years. Those information needs and schedule are displayed in Table 1.

To provide direction for the remainder of the Department's fisheries research program, a combination of management, hatchery, and research personnel identified and prioritized needed information and tools that would enhance fisheries management in Idaho. With the current staff committed to discretionary research, the top fifteen items could be addressed during the 1996-2000 planning period. Those research activities and the planned schedule for addressing each are shown in Table 2.

Table 1. Anadromous Research Activities, 1996-2000.

	INFORMATION NEEDS TO BE ADDRESSED BY ANADROMOUS RESEARCH	SCHEDULE
1	Relative survival of smolts subjected to various mainstem migration scenarios.	1996-2000
2	Response in survival of smolts to returning adults for various migration conditions.	1996-2000

3	Effective communication of sound scientific information on anadromous fish.	1996-2000
4	Chinook captive rearing and captive broodstock techniques.	1996
5	Chinook and steelhead life history parameters.	1996-2000
6	Written documentation of historic anadromous resource status, policies and management in Idaho.	1996
7	A synopsis of hatchery supplementation research for salmon and steelhead.	1996
8	Catch and release mortality of adult chinook.	1996-1997
9	Improvement of smolt production from hatchery stocks.	1996-1998
10	Relative benefits of volitional smolt releases.	1997-2000

Table 2. Discretionary Research Priorities, 1996-2000.

PRIORITY*	MANAGEMENT NEEDS TO BE ADDRESSED BY DISCRETIONARY RESEARCH	SCHEDULE
1(4)	A standardized common fisheries data base for streams, lowland and alpine lakes.	1995-96
2(13)	A matrix for designing creel censuses which yield estimates of given precision and reliability.	1995
3(1)	Population effects of whirling disease in Idaho.	1995-98
4(3)	Tradeoffs in economics and angler satisfaction from stocking lowland lakes with hatchery trout at various sizes, times, frequencies, densities and condition.	1995-99
5(10)	Population effects of electrofishing injury.	1995-97
6(11)	Relative numbers, characteristics, and ultimate fate of anglers displaced by various regulation changes.	1995-97
7(8)	Improved methods for determining angler opinions and preferences. 19(12) A method for quantifying angler satisfaction. 24(20) Can adjusting expectations improve angler satisfaction. 25(16) Do social norms or expectations bias anglers' responses on opinion surveys.	1995-99 1998-99 1997-99 1996-98

8(-)	A matrix for designing trout stream sampling programs which will yield estimates of given precision and reliability which are representative enough for various sampling objectives.	1998-99
9(6)	A synopsis of alpine lake management.	1995
10(9)	Sterile hatchery trout which can be produced economically and consistently on a production level that will avoid genetic risk to wild trout and/or perform better.	1995-99
1 1(-)	The response of bull trout populations to the 1994 harvest closure.	1995-99
12(7)	Relationships between physical and chemical characteristics of lakes and reservoirs and the quality of fisheries.	1995-97
13(5)	The mechanisms and magnitude of fish losses from reservoirs, whether losses hinder the attainment of fisheries goals, and if so, how to minimize or mitigate losses.	1997-99
14(14)	Life history characteristics of Idaho hatchery rainbow broodstocks which might influence the ultimate size and contribution to the fishery.	1997-99
15(2)	The fishery impact of stream trout losses to irrigation diversions/if significant, means of minimizing or mitigating.	1995-99
+	Methods for increasing catchability of hatchery trout.	1995-99
+	The ability of special regulations which do not prohibit bait to meet management objectives.	1995-99
+	Finalize and communicate "random response" method for measuring regulation non-compliance.	1996

* Projects prioritized by two methods: ranking based on a combination of a) potential benefit to fishery, b) likelihood of success, and c) cost; and ranking (in parenthesis) of general importance with no specific criteria.

+ Projects which are ongoing or were not rated, but complement planned research.

Appenidix C.

RESEARCH REPORTS

General Guidelines
and
Report Preparation Process

Guidelines

Preparation of annual research reports plays a vital role in meeting the research mission, as well as being a contractual obligation and requirement for continued funding. It is to the benefit of the researcher and research mission, however, to strike a balance between preparation of research reports and other means of effectively communicating research information and tools to our clients.

The main guideline for annual report preparation is to bear in mind the two primary purposes of an annual report: 1) to provide documentation to a funding entity that the contracted work was performed, and 2) provide a permanent record of data collected, analysis performed, and findings made which will serve as a reference document and institutional memory. Annual reports are a means of communicating information to other researchers and our clients, but other forms of communication are generally more effective. Annual reports alone will not satisfy that need. Separate, more directed efforts are required to satisfy that portion of the research mission.

Previously established standard research report format and guidelines are to be followed. However, it is the intent to minimize unnecessary duplication as long as reporting objectives (document that contracted work was done and provide institutional memory) are satisfied. Accordingly, if the work is summarized and documented adequately for some other purpose, i.e. a research brief or journal article, that may be substituted for all or part of the research report by including it with a proper identifying cover sheet. It is also acceptable to wait and report on analysis of data collected during one year in a future year's report but it should be stated.

Annual report content may vary considerably depending on the nature and stage of the research being reported on, but should focus on objectives. Some report content guidelines for the major types of research activities are:

Finite, Multi-Year Research - The first year's report should include a research logic tree, goals and objectives, the study and experimental design, analytical techniques and statistical tests to be applied, who will benefit from the research, and how the results will be communicated to them (journal articles, technical presentation, briefs, presentations, research report, etc.). The first year's report should also include any pertinent background or introduction.

Progress or interim year reports should include a restatement of research objectives, but need not repeat any of the background or study design reported in the first year's report. Interim year reports should present data collected and report on progress of the research. Discussion and other narrative should be only as needed, describe progress, or report on completed phases. Avoid speculative or preliminary discussions. Analysis of data should be ongoing as research progresses to insure that analytical techniques are appropriate, but minimal reporting of ongoing or preliminary data analysis is required. Any problems, deviations from the experimental design, or recommended changes to the study should be discussed.

The final report should repeat any pertinent background or introduction, research goals and objectives, methods, final results, and a discussion including comparisons to other relevant research on the subject. A journal reprint or manuscript may be substituted for a final report.

Ongoing or Monitoring and Evaluation Research - First year reports should include the same information as the previous report type. Thereafter, maximize the use of tables for merely updating trend information or presenting data. Avoid narrative presentation of data. Minimize annual analysis and narrative unless warranted by completion of a study phase, a change in study design is warranted, or the data or management needs dictate analysis and conclusions.

Single-year projects - These may be spinoffs from a main project or jobs or projects conducted all within one contract year. Obviously, these need to stand alone and include all pertinent background, goals and objectives, study design, results and discussion. A research brief or other separately prepared document could be substituted for all or part or the reporting requirements.

Figures and Tables - All figures and tables should be complete enough in title and legend to be able to stand on their own without depending on the report narrative for explanation.

Report Preparation

Review Drafts

Primary authors are responsible for preparing review drafts. It may be helpful to solicit comments and suggestions on the report from colleagues during preparation of the review draft. Review drafts should be complete, fully developed products representing the authors' best effort. Tables and figures should be complete, finished products, with the exception that figures may be photocopies of original artwork with legends, labels, and captions added.

Unless a separately prepared brief, manuscript, or other report is being submitted to satisfy reporting requirements, review drafts should comply with format and style in established research report guidelines with the exception of being double spaced.

Peer Review

The Fishery Research Manager will designate three peer reviewers following recommendations from and consultation with the primary author. Considerations in selecting reviewers may include their expertise on the subject, analytical techniques applied, study design, or effective communication; their potential use of the information or tool; and their review load. Peer reviewers should include at least one from outside the research section and may include persons from outside the Department.

The primary author will provide to reviewers a copy of review guidelines (Appendix A) and a specific deadline for return to the primary author.

Final Draft Preparation and Submittal

The author(s) shall consider reviewers comments and incorporate suggestions or make modifications where appropriate. For significant comments or suggestions not incorporated, reasons why should be noted directly on the reviewer's edited draft or review memo.

The primary author is responsible for preparing a single spaced final draft incorporating tables with headings and format consistent with research report guidelines (with previously discussed exceptions). Text and table of contents should be numbered. Figures should not be incorporated into the text document but submitted separately (page numbers will be adjusted by Word Processing Specialist prior to printing). Figures submitted in hard copy form should have captions attached separately.

The final draft is to be submitted in hard copy, along with the three peer reviewers' edited copies and related comments, to the Fisheries Research Manager. A separate statement of total funds expended during the contract year reported on is to be attached. An electronic or disc copy is to be submitted to the Word Processing Specialist at the same time. The Fishery Research Manager will review the final draft and reviewers' copies to evaluate the reviewers comments and the degree to which they were incorporated into the final draft. Reviewers should be acknowledged in the report.

The intent is that no further editing occur, but reports may be returned to the author if reviewers comments were not adequately considered or the final draft is not submitted in acceptable form.

Schedule

Deadline:	Final reports are due to the contracting agency 90 days after the end of the contract period.
8 Weeks Prior:	Primary author submit to Word Processing Specialist and Research Manager.
11 Weeks Prior:	Peer reviewers return edited drafts to the primary author.
13 Weeks Prior:	Primary author provide review drafts to peer reviewers.

Appendix D.

Guidelines for Reviewers

of Idaho Department of Fish and Game
Fisheries Research Reports

The Fisheries Research Section would appreciate your help in critically reviewing the attached research report. Reviewers are selected for a variety of reasons. Each reviewer is not necessarily expected to have expertise or perspective on all aspects of a report. **If you are not able to complete a review of this report and return it to the primary author within three weeks, please notify the author immediately.**

Your comments may be written directly on the text and/or provided on a separate sheet of paper. Please be as clear as possible on what portion(s) of the report the comments are relevant to. The Research Section is concerned with maintaining and improving the quality and efficiency of their reports and review process. Accordingly, your comments on the strengths of the report, as well as suggestions for its improvement, are solicited.

To assist in your review, please evaluate the report in the context of the Research Report General Guidelines. In addition, the following questions are offered as a guide for your review:

Does the report adequately document what work was performed during the contract year?

Is the abstract informative? Can our clients or others not familiar with the research understand and /earn anything from it? Does the abstract contain information or cover topics not included in the report?
is the report written clearly, concisely, and coherently?

Are results and/or research progress clearly presented? is it easy to track how results address the objective(s)? Are the tab/es sufficiently complete and the figures adequate?

Are the statistical tests appropriate for the data and correctly applied; are there technical errors or other inaccuracies?

For initial year reports, are the logic, goals, objectives and ultimate value and application of the research clearly stated? Is the study design and analytical techniques to be used adequately described?

For final reports, are the conclusions adequately supported by the data? Has adequate analysis of the data been conducted to derive potential benefits from the research? Are methods adequately described in the report to allow duplication of the research? Are findings well integrated with existing know/edge? Are management implications clearly stated?

For ongoing or monitoring projects, is the data easy to find and follow over time? Is there unnecessary or distracting speculation in the narrative?

Please write on top of manuscript date received and date returned to author.

ANNUAL PROGRESS REPORT

State of: Idaho

Grant No.: F-73-R-18, Fishery Research

Project No.: 2

Title: Statewide Fisheries Statistical Assistance, Angler Opinions, and Harvest Surveys

Period Covered: April 1, 1995 to March 31, 1996

OBJECTIVES

1. To provide estimates of harvest and effort for the following species: steelhead, sturgeon, and bull trout.

2. To provide IDFG personnel with training and support in angler survey design, implementation, and analysis.

RESULTS

Harvest Estimates

The following harvest surveys were completed with results distributed to management and reported in separate management documents and electronically on the Internet:

a. 1994 Sturgeon Catch and Effort Survey
b. 1994 Fall Steelhead Season Harvest and Effort Survey
c. 1995 Spring Steelhead Season Harvest and Effort Survey
d. 1995 Sturgeon Catch and Effort Survey
e. 1995 Fall Steelhead Season Harvest and Effort Survey
f. 1996 Spring Steelhead Season Harvest and Effort Survey

Survey and Statistical Training and Support

The following survey, statistical, database, and computer support was provided to research and management personnel:

a. Attended Federal Aid Survey Conference and presented present status and technology employed in Idaho Department of Fish and Game surveys.
b. Five Year Fisheries Management Plan Angler Opinion Survey.
c. 1995-1996 Fishing Rules Angler Opinion Survey.

d. Dworshak Reservoir angler creel set-up, training of personnel, and on-site evaluation.
e. Lake Coeur d'Alene angler creel set-up, training of personnel, on-site evaluation, consultation on analysis, and posting of results on the Internet.
f. Conducted 1994 Angler Diary Analysis.
g. Creel System Support updates instruction, manuals, and assistance in analysis techniques provided to regional fisheries management and research personnel upon request.
h. Analysis of fifty IDFG roving creels for optimum sampling effort calculations.
i. Assembled creel survey set-up handout ("Creel Matrix") for IDFG fisheries managers review.
j. Reviewed, edited, and provided written comments on a creel survey article to be published in the North American Journal of Fisheries Management.
k. Rewrote computer programs and updated IDFG Tournament Permit System for Resident Fisheries Management.
I. Conducted mail survey of statewide angler creel survey methodologies employed by other state agencies.
m. Conducted 1995 Angler Diary Analysis.
n. Installed Statewide Fisheries Economic Survey Database on IDFG Local Area Network, distributed printed copies of results upon request, and currently in process of placement upon Internet for public access.
o. Assisted in development and implementation of IDFG Internet web site (see: http//www.state.id.us/fishgame/fishgame.html which won the award for top conservation web site.
p. Supervised computerization of IDFG Historical Fisheries Report Listing with search capabilities and placement for public access on the Internet.
q. Consultation and review of current literature on mark-recapture experiments with emphasis on pseudo-replication problems affecting current IDFG studies.
r. Conducted Internet training for biologists at IDFG In-Service Training School.
s. Extracted barbed hook violations and warnings from IDFG Enforcement Database for use in angler compliance studies.
t. Extracted list of sturgeon fishing permit holders from IDFG License Buyer Database and printed mailing labels for three issues of "Sturgeon Newsletter."
u. Continued assistance in development of common biological database on Oracle platform for multi-user access and linkage to IDFG accounting, license, inventory, license buyer, and violator database.
v. Continued advisement of IDFG fisheries personnel on use and interpretation test statistics in the Generalized Linear Multivariate Model, and assistance in computations for power analysis.
w. Collected biological data and provided recommendations on access point survey techniques to research personnel while on-site.

Author:

Thomas J. McArthur
Fisheries Staff Biologist

95DJRPT

Submitted by:

Al Van Vooren
Fishery Research Manager

Thomas J. McArthur
Fishery Staff Biologist

Approved by:

IDAHO DEPARTMENT OF FISH AND GAME

Steven M. Huffaker, Chief
Bureau of Fisheries

Costs:

State	$62,311
Sport Fish Restoration	$186,933
Total	$249,244